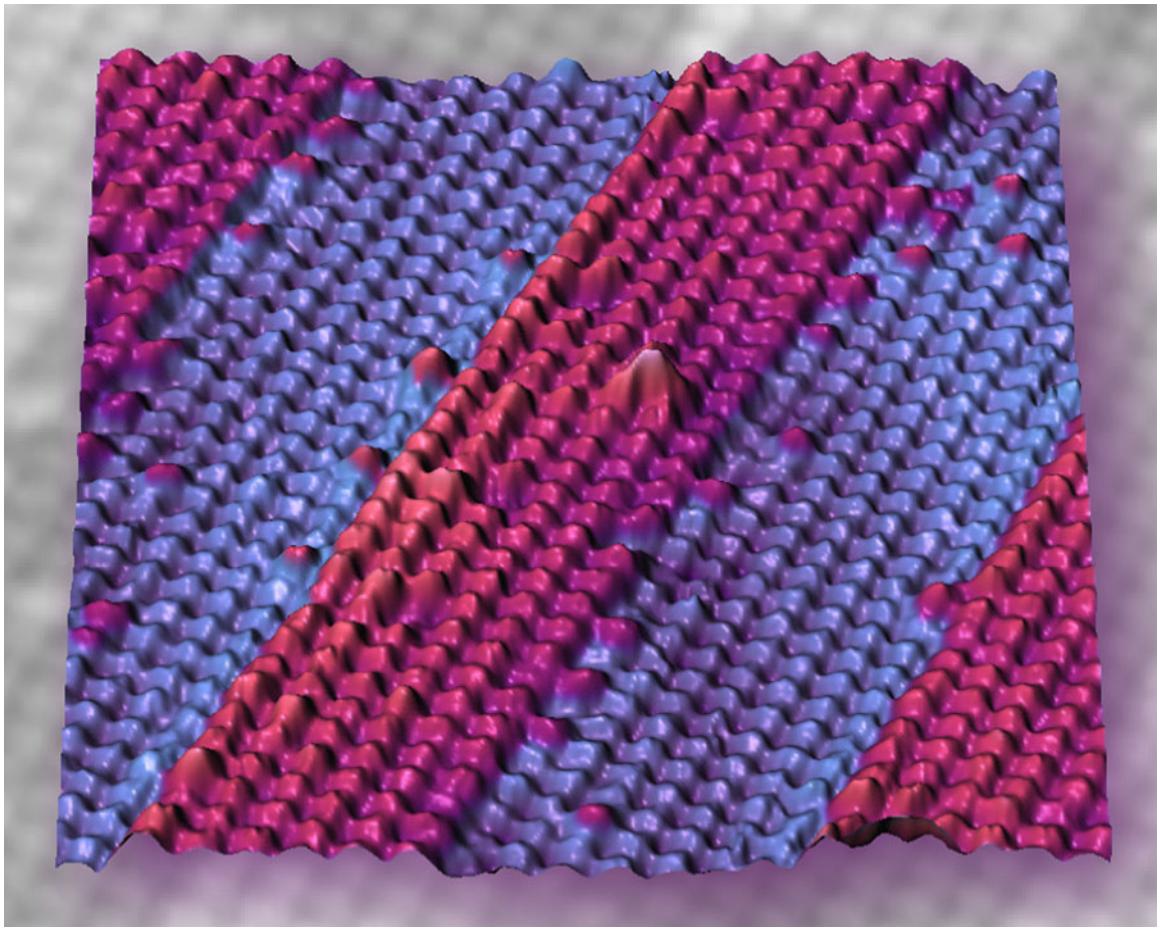

Scanning Tunneling Microscopy of Superlattice

This color-enhanced 3-D rendered STM image shows the atomic-scale structure of the interfaces between GaSb and InAs in cross-section. A superlattice of alternating GaSb (12 monolayers) and InAs (14 monolayers) was grown by molecular beam epitaxy. A piece of the wafer was cleaved in vacuum to expose the (110) surface, and then the tip was positioned over the superlattice about 1 μm from the edge. Due to the structure of the crystal, only every-other lattice plane is exposed on the (110) surface, where only the Sb (reddish) and As (bluish) atoms can be seen. Out-of-place atoms are readily seen. The atoms are 4.3 Å apart along the rows, with a corrugation of <0.5 Å.